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Adapting to a Bearish Nuclear Market

The Transition of Framatome in the 1980s

Mauro ELLI

Abstract

The 1980s were comparably lean years for the nuclear power industry. This was not just out of general economic trends; rather, a number of medium-to-long-term endogenous dynamics were putting constraint upon an international industry still articulated in national champions. The cumulative effect of such dynamics was a growing gap between the distribution of production capacity and potential domestic demand. If for a while export markets appeared as a possible solution, they did not stand up to earlier, inflated expectations.

Drawing on unpublished documents of the Framatome Board, it is possible to understand how the French company tackled the problem of a bearish nuclear market. After having started a process of inner differentiation since 1983, by July 1986 Framatome adopted new strategic guidelines aimed at transforming it into a 'multipolar' group. On the one hand, the nuclear sector was scaled down, with a sizeable cut in heavy boiler-making capacity, a refocusing on product and services, and a policy of alliances aimed at developing an European standard nuclear island (i.e. the joint venture with Siemens) and penetrating into the U.S. market (i.e. agreements with Babcock & Wilcox). On the other hand, the realm of electronics was deemed as a most promising area for diversification as its high-tech content suited well a firm overstaffed with engineers and technicians accustomed to deal with their end-product in terms of safe reliability. With the creation in 1989 of Framatome Connectors International as a holding company for Burndy, Souriau and Jupiter, the French group became one of the five biggest enterprises of the sector; the '*pole connectique*' was expected to produce one-half of consolidated revenues by 1993.

Framatome reacted timely in front of a depressing nuclear market trend by progressively formulating a strategy which was basically aimed at using the sizeable profits obtained through the French nuclear power programme in order to preserve the company's capacity and expertise for better times. This process intertwined with and was complicated by the struggle to defend Framatome independence as an industrial subject in respect of its own shareholders, with first the crisis of Creusot-Loire and then the clash with CGE. The strategy would have been basically sound if it had not revolved around the forecast of a upturn of the nuclear market in the mid term; such a nuclear renaissance, however, hardly

materialised. Moreover, the choice in favour of connectors for diversifying the company's area of activities was unexpectedly problematic, while the well-known difficulties of the EPR reactor and the ultimate exit of Siemens from the nuclear industry cast a further shadow on Framatome's strategy. The latter's basic – and probably unforeseeable – flaw, however, consisted in confiding in a possible restart of nuclear power in the Western industrialised countries after Chernobyl.

Keywords: diversification, connectors, Siemens, independence

Résumé

Les années 1980 furent une période de vaches maigres pour l'industrie de l'énergie nucléaire. La raison ne fut pas fondée seulement sur les tendances économiques générales ; plutôt, un certain nombre de dynamiques endogènes, à moyen et long terme, mirent des contraintes sur une industrie internationale toujours articulée en champions nationaux. L'effet cumulatif de ces dynamiques fut un écart croissant entre la répartition de la capacité de production et la demande intérieure potentielle. Bien que les marchés d'exportation apparussent pendant un moment comme une solution possible, ils ne furent pas finalement au niveau des prévisions antérieures, excessives.

En utilisant des documents inédits du conseil d'administration de Framatome, il est possible de comprendre comment cette entreprise française aborda le problème d'un marché nucléaire baissier. Après avoir commencé un processus de différenciation interne depuis 1983, en juillet 1986 Framatome adopta de nouvelles orientations stratégiques visant à la transformer en un groupe « multipolaire ». D'une part, le secteur nucléaire fut revu à la baisse, avec une coupe importante de la capacité de chaudronnerie lourde, un recentrage sur les produits et services et une politique d'alliances visant soit à l'élaboration d'un flot nucléaire standardisé européen (à savoir la joint-venture avec Siemens), soit à pénétrer le marché américain (accords avec Babcock & Wilcox). D'autre part, le domaine de l'électronique fut considéré comme le secteur le plus prometteur pour la diversification, en raison de son contenu high-tech qui s'adaptait bien à une société en sureffectif en matière d'ingénieurs et de techniciens habitués à traiter avec leur produit final en termes de fiabilité et de sécurité. Avec la création en 1989 de Framatome Connectors International en tant que holding pour Burndy, Souriau et Jupiter, le groupe français devint l'une des cinq plus grandes entreprises du secteur ; on s'attendait à ce que le « pôle connectique » fournisse la moitié du bénéfice consolidé de la société en 1993.

Framatome réagit sans délai face à la tendance à la baisse du marché nucléaire en formulant progressivement une stratégie qui visait essentiellement à utiliser les bénéfices importants obtenus par le programme électronucléaire français afin de préserver la capacité et l'expertise de la société pour des temps meilleurs. Ce processus s'entrecroisa avec et fut compliqué par la lutte pour défendre l'indépendance de Framatome en tant qu'acteur industriel à l'égard de ses propres actionnaires, d'abord avec la crise de Creusot-Loire et puis avec l'affrontement avec la CGE. La stratégie aurait été fondamentalement solide si elle n'avait pas

tenu à la prévision d'une reprise du marché nucléaire à moyen terme ; une telle renaissance du nucléaire, cependant, ne se matérialisa guère. En outre, le choix en faveur de connecteurs pour la diversification de la société fut problématique de façon inattendue, tandis que les difficultés bien connues du réacteur EPR et la sortie ultime de Siemens de l'industrie nucléaire jetèrent une nouvelle ombre sur la stratégie de Framatome. Néanmoins, le défaut fondamental, et peut-être imprévisible, de sa stratégie tenait à la confiance en un redémarrage possible de l'énergie nucléaire dans les pays industrialisés occidentaux après Tchernobyl.

Mots clés : diversification, connecteurs, Siemens, indépendance

*

Introduction

In a sort of public valedictory on the eve of his retirement, the long-standing CEO of Framatome, Jean-Claude Leny, stated: “*je souhaite que nos actionnaires et ceux qui me succéderont à la tête de Framatome parachèvent cet effort. Il leur faudra la continuité de vue, la persévérance et le dynamisme sans lesquels le succès industriel demeure hors de portée.*”¹ This effort concerned the process of diversification of the company started during the 1980s, in the context of a bearish nuclear market, which aimed at allowing Framatome to preserve its potential for the time when nuclear power – after a long wandering into the wilderness – would come back to the fore.

Nuclear stagnation in the 1980s was not so much out of exogenous shocks, rather the result of a number of interlocked, endogenous dynamics – escalating costs, low load factors, limited plant availability, increasingly stringent and erratic national safety regulations, growing public hostility – which had been already at work during the late 1970s and, by the early 1980s, were giving rise to a growing literature on the “failed promise of nuclear power.”² The cumulative effect of such dynamics was a widening gap between the distribution of production capacity and potential domestic demand. In other words, the risk was for the industries in Western Europe and

¹ Jean-Claude Leny, preface to *Framatome: du bureau d'ingénierie nucléaire au groupe international* (Paris: Albin Michel, 1995), 8-9.

² Irvin Bupp and Jean-Claude Derian, *The Failed Promise of Nuclear Power: The Story of Light Water* (New York: Basic Books, 1981). The number of these studies is daunting and their approach varying: see, for example, Charles Komanoff, *Power Plant Cost Escalation: Nuclear and Coal Capital Costs, Regulation, and Economics* (New York: Van Nostrand, 1981) and Mark Hertsgaard, *Nuclear Inc.: The Men and Money Behind Nuclear Energy* (New York: Pantheon, 1983). Notably on the opposition to nuclear energy see Wolfgang Rüdiger (ed.), *Anti-nuclear Movements: A World Survey of Opposition to Nuclear Energy* (Harlow: Longman, 1990) and Lawrence Wittner, *Toward Nuclear Abolition: A History of the World Nuclear Disarmament Movement, 1971 to the Present* (Stanford: Stanford University Press, 2003).

the USA to find themselves on the ‘forgetting curve’ for lack of experience: a contraction seemed inescapable, while domestic nuclear power programmes in most industrialised countries were vehemently put into question.³

With a hoped-for export market that failed to materialise and dwindling orders at home, Framatome devised and implemented a corporate strategy aimed at preserving, on the one hand, its capacity in nuclear engineering by means of industrial alliances and acquisitions, and at consolidating, on the other hand, its heavy manufacturing base while, at the same time, building up a new pole of activity. This was accomplished by taking part to the global shift towards a liberalisation of foreign direct investments, the growth of the USA as a host economy and the transition towards a web-like restructuring of multinational enterprises around core products – all themes widely debated at the time.⁴ The outcome was far from granted, however, as it was pursued against the background of the twists and turns of the French economic policy in the Mitterrand era⁵ and against the competing ambitions of Framatome’s main shareholder.

Corporate Strategy and Struggles for Independence

In the early 1980s, when the cycle set off by the first oil shock and the far-reaching programme aimed at turning nuclear France’s base load was reaching its climax, the French nuclear industry was basically a ‘cooperative oligopoly’ made of four poles, each dependant from the State at least for its basic orientations: Électricité de France (EDF); the Commissariat à l’Énergie Atomique (CEA); the group Empain-Schneider, which controlled Creusot-Loire, which in turn controlled Framatome; Alsthom and its majority shareholder, the Compagnie Générale d’Électricité (CGE).⁶ Two momentous changes were looming, however: first, against the background of economic trends not really buoyant, EDF would certainly not need additional nuclear generating capacities at the same pace as hitherto; second, the financial weakness of Creusot-Loire

³ William Walker and Måns Lönnroth, *Nuclear Power Struggles. Industrial Competition and Proliferation Control* (London: Allen & Unwin, 1983). John Surrey and William Walker, “World Power Plant Industry in Recession,” *Nuclear Engineering International* 320 (1981): 15-16.

⁴ See Charles Kindleberger and David Audretsch, *The Multinational Corporation in the 1980s* (Cambridge: MIT Press, 1984) and Geoffrey Jones, “Multinationals from the 1930s to the 1980s,” in *Leviathans. Multinational Corporations and the New Global History*, ed. Alfred Chandler and Bruce Mazlish (Cambridge: Cambridge University Press, 2005), 81-103.

⁵ A brief overview in Jean-Charles Asselain, *Histoire économique de la France du XVIII^e siècle à nos jours*, Vol. 2: *Depuis 1918* (Paris: Seuil, 2011), 174-184.

⁶ Boris Dänzer-Kantof and Félix Torres, *L’Énergie de la France. De Zoé aux EPR* (Paris: Bourin, 2013), 579-584.

determined at least potentially an occasion for a general reshuffle in the nuclear industry.⁷

Framatome was an ambivalent entity: on the one hand, a powerful engineering bureau with a workforce of some 3000 technicians; on the other hand, direct owner of key heavy machine shops or bound by shareholding relations with other manufacturers. This configuration had an inner consistency, in that it guaranteed to Framatome control on the whole range of activities connected to the nuclear steam supply system (NSSS), at both hardware and software level. Indeed, since 1970 EDF had insisted for the integration of key manufacturing lines into Framatome, in order to avoid – through a permanent feedback – the issuing of unrealistic specifications from the design desk and, more generally, difficulties at the architect-engineer level. In 1972 Westinghouse, which still held 45% of Framatome, carried its weight in favour of this solution, so that – after a difficult negotiation with Creusot and Empain-Schneider – the manufacture of pressure vessels, steam generators and pressurizers was transferred to Framatome.⁸

If the independence of Framatome had been cause of conflicts, by late 1982 the growing weakness of Creusot was increasingly bringing to the fore a possible prime role of Alsthom in the shareholding structure of Framatome. Such a move arose ominous forebodings in the leaderships of both Framatome and EDF, since they believed that Alsthom and CGE aimed at controlling the company. Merging Framatome and Alsthom would determine an enormous electro-mechanical industrial subject, according to the American and German model, which would be able to offer complete nuclear power stations, maybe on the turn-key formula. In such an operation, Framatome would lose its key feature, i.e. the in-house availability of both design and heavy manufacturing capabilities, and over

⁷ On EDF see the relevant parts of Henri Morsel (ed.), *Histoire de l'électricité en France. Une oeuvre nationale: l'équipement, la croissance de la demande, le nucléaire (1946-1987)* (Paris: Fayard, 1996) and Alain Beltran, *Electricité de France, Cinquante ans d'histoire(s) à l'international* (Paris: Le Cherche-Midi, 1996). On the CEA see Gabrielle Hecht, *Le rayonnement de la France: Énergie nucléaire et identité nationale après la Seconde Guerre mondiale* (Paris: La Découverte, 2004) and Marie-José Lovérini, *L'Atome: de la recherche à l'industrie. Le Commissariat à l'Énergie Atomique* (Paris: Gallimard, 1996). A general history of the group Schneider, encompassing also the decades after the Second World War, is Tristan de la Broise and Félix Torres, *Schneider: l'histoire en force* (Paris: de Monza, 1996). On the CGE in general see Jacques Marseille (ed.), *Alcatel-Alsthom. Histoire de la Compagnie Générale d'Électricité* (Paris: Larousse, 1992) and, more specifically on the 1980s, Yves Bouvier, *Connexions électriques. Technologies, hommes et marchés dans les relations entre la Compagnie Générale d'Électricité et l'État, 1898-1992* (Brussels: P.I.E Peter Lang, 2015), 569-630. On Alsthom see Françoise Nieto, *MW & km/h. Une histoire d'Alstom* (Spézet: Coop Breizh, 2010).

⁸ Leny à Guilhamon, 05/07/83, boîte 890779, Archives EDF (thereafter AEDF).

time its independence as an industrial subject. Thus it is hardly surprising that Leny was opposed to this solution – as well as to a merger with Creusot aimed mainly at rescuing financially the parent company with the money of its subsidiary. In the eyes of EDF, instead, the creation of a potentially overweening nuclear supplier put into question the role of the former as “*ensemblier*” and drastically limited its room for manoeuvre.⁹ This is the reason why the head of EDF *Direction de l'équipement*, Remy Carle, urged a direct participation of the public electric utility to the capital of Framatome and the preservation of the unity of command in the latter; otherwise, “[...] *il y aurait la création d'une entité qui aurait rapidement la tentation de définir elle-même la politique nucléaire française et dont le caractère monopolistique rendrait le contrôle très difficile, que ce soit par le Pouvoirs Publics ou par le client français.*”¹⁰

The convergence between Leny and the EDF leadership applied also to the case of CEA. After the final collapse of Creusot in 1984, Leny wrote fiery letters in which he denounced in not uncertain terms that the Commissariat should not be allowed being the majority shareholder of Framatome, as the former would participate to the ‘pillage’ of the company while, at the same time, deterring possible industrial subjects from getting involved. On the contrary, Leny favoured a solution according to which both EDF and Dumez would enter the capital of Framatome, so ruling out the possibility of a predominant shareholder while preserving the integrity of the company. In the event, this was the solution sanctioned by the French Government. Beginning with 1 November 1985 Framatome was turned into a limited company; the new shareholding structure came into force on the New Year Day of 1986. Both EDF and Dumez entered the capital; the CGE became the main shareholder at 40%, while the CEA share was reduced at 35%.¹¹

During these years of turmoil, Framatome had been actively looking for diversification. In 1983 it was created a new Strategy Directorate with the task of devising medium-to-long-term ways to preserve the company's overall viability. Headed by the 43-year-old Éliane Morin, former scientific attaché in Washington and Director for Scientific Affairs at Renault, the Directorate was to identify new areas in which Framatome's embedded skills could profitably be put at play, so ensuring its financial viability while the nuclear market was depressed. Through an internal audit of expertises available, it was launched a process of diversification

⁹ Note de la Direction de l'équipement, 26/04/83, b. 890779, AEDF. Dänzer-Kantof and Torres, *L'Énergie de la France*, 586-593.

¹⁰ Carle à Guilhamon, 08/09/82, b. 890779, AEDF.

¹¹ Leny à Goury, 14/12/84; Leny à Gallois, 17/12/84; Leny à Benezit, 18/06/85; Renon à Boiteux, 19/11/85, b. 890779, AEDF.

“*par bourgeonnement*” which focused on IT, software for structural analysis, and digital image processing.¹² In the course of the years, such activities – pursued through a number of subsidiaries and autonomous units – produced uneven results: while software for structural analysis developed out of Framatome’s own nuclear engineering work were quite successful, digital image processing or research on artificial intelligence did not produced the expected results.¹³

The year 1986 represented somewhat a return to normality after the fibrillations of the crisis of Creusot. While in the nuclear business sale services generated a record turnover of FF 13.2 billions and got ready to overtake NSSS manufacturing activities by number of employees, the new 4-year strategic plan set the target of creating a second main pole of activity by way of massive investments in the order of FF 2-3 billions in the period 1987-88.¹⁴ Thus the financial solidity of Framatome, mostly determined by the French nuclear programme now dwindling, would be used to take over one or more leading companies in a certain sector to be identified, which would counterweight the reduction in NSSS orders and help to preserve the company economically viable, thereby allowing the safeguard of its expertise in nuclear engineering from dispersion and disinvestment. On 23 December 1986 the shareholders approved the new strategy:

*La première priorité de Framatome doit être une diversification “interne,” c’est-à-dire dans les services et le combustibles nucléaires. En ce qui concerne la diversification “externe,” il paraît souhaitable que Framatome concentre ses efforts sur la recherche d’investissements lourds ou moyens et ne prends pas un grand nombre de participations de faible montant unitaire (dans cet esprit, Framatome devrait saisir les occasions de désinvestissement de certaines de ses filiales actuelles offrant un rendement très faible, avec des risques parfois importants).*¹⁵

A promising investment opportunity emerged in February 1988 when Schneider – the former parent company of Creusot now engaged in a radical industrial restructuring – targeted Télémécanique with a hostile takeover bid. Framatome, which was much interested in diversifying its activities in high-tech, industrial automation technology, was more than willing to play the role of ‘white cavalier’ by setting up a higher counter-

¹² Orientations stratégiques de la Société, oct. 1988, b. 890781, AEDF. “Framatome Connectors International – Éliane Morin,” *Les Echos*, January 18, 1994.

¹³ Conseil d’administration Framatome (hereafter C.a.F.) du 16/12/87, b. 890780, AEDF. Rapport de gestion du conseil d’administration, 19/04/89, b. 890782, AEDF.

¹⁴ Projet de rapport au conseil d’administration – exercice 1986, n.d., b. 890780, AEDF. Orientations stratégiques de la Société, oct. 1988, b. 890781, AEDF.

¹⁵ Réunion de concertation entre actionnaires de Framatome, 23/12/86, b. 890785, AEDF.

bid in agreement with the management of Télémécanique. Events in the following few months led an Italian newspaper to call the Paris stock exchange a “*cour des miracles*”.¹⁶

Indeed, a special meeting of the Framatome Board approved *ex post facto* the Télémécanique bid on 29 March 1988, but by mid June CGE – now denationalised and headed by Pierre Suard – would block the whole operation much to the benefit of Schneider. At the same time, Suard tried to severely limit Leny’s autonomy by proposing the creation of a restricted committee inside the Board, which would be composed by Jean-Pierre Capron (CEA), Jean-Paul Parayre (Dumez) and himself. This committee would have the right of examining every project of direct or indirect takeover of more than 5% of a given company, as well as any transfer from the funds of Framatome. In the event, such attempt at putting the company under strict control backfired because the former director-general of EDF, Jean Guilhamon, supported Leny in his row with Suard, since the public utility would be excluded from the restricted committee.¹⁷

These events effectively frustrated the first major diversification attempt of Framatome according to the corporate strategy agreed in December 1986. There were rumours of pacts between certain shareholders of CGE and others of Schneider (e.g. Union des Assurance de Paris with Midi), but what is worth noting here is that Suard and Leny were at loggerheads not merely because of a personal antipathy, though the latter might have played a role, rather since their strategies for the respective company contradicted each other. At a first glance, there were striking similarities: even Suard believed in the compelling need for a high-tech, capital-intensive company to attain a ‘critical mass’ in order to compete globally; such a ‘critical mass’, in the areas of telecommunication and production and transport of energy should be guaranteed by a real, deep integration at group level. This blueprint of what was to become Alcatel-Alsthom had an unfortunate corollary for Framatome, however: it resuscitated the idea of merging the latter with Alsthom in order to create a single electro-mechanical concern on the model of Westinghouse.¹⁸

The *Affaire Télémécanique* was a resounding manifestation of this inherent contradiction, which would lead to a hardening of the Framatome’s leadership in their projects of diversification on the one hand, and to repeated attempts on Suard’s part to limit these projects by intervening on the company’s financial policy on the other hand. So the

¹⁶ Gianfranco Modolo, “Contro l’OPA lotta dura,” *La Repubblica*, May 20, 1988.

¹⁷ C.a.F. du 29/03/87; c.a.F. du 22/06/87; c.a.F. du 30/06/87, b. 890781, AEDF.

¹⁸ Pierre Suard, *L’envol saboté d’Alcatel-Alsthom* (Paris: France-Empire, 2002), 83, 118, 125-6. Dänzer-Kantof and Torres, *L’Énergie de la France*, 594-5.

president of CGE insisted, for example, on the distribution to shareholders of the whole profit of the year 1988, so that Framatome would not be able to create reserves in view of its industrial reconversion, thereby becoming financially more dependent on those same shareholders. In the summer of 1989, while the diversification effort of Framatome was reaching its peak with the acquisition of the US company Burndy, the CGE galaxy tried in vain to block the issuing of derivative securities. This complex – and rather safe – financial instrument, proposed by Morgan Stanley through Crédit Lyonnais, would allow Framatome to raise capital at very good terms while, at the same time, improving its balance sheet. Ignoring the technical argument of Jean-Yves Haberer, the president of Crédit Lyonnais whose appointment to the Board of Framatome CGE had opposed, Suard basically implied that the company did not need to pursue a policy of independence.¹⁹

On the part of Framatome, these ‘ambushes’ – together with increasingly bleak trends of the nuclear market – determined a crash effort into differentiation. The target now was to develop by 1991 a second and, possibly, a third pole of activity respectively in the realm of connectors and in aircraft and military equipment through an investment of up to FF 7 billions. The reasons for the focus on these particular areas were clearly stated:

Bien que sortant de ses métiers existants, FRAMATOME a cherché à retrouver dans les métiers nouveaux certaines caractéristiques qui lui permettraient de les appréhender:

- *une dimension technologique: métiers à fort contenu technologique (conséquence sur le spectre de qualification des personnels: fort pourcentage de techniciens/d’ingénieurs);*
- *dimension marketing: les clientes des sociétés visées desservent pour une part importante des marchés étatiques ou para-étatiques. La liste de ses clientes est une liste finie. Le rapport avec le client est étroit et existe dès la phase de conception ou de développement du produit. La démarche commerciale est pour une part de nature relationnelle, comme avec EDF;*
- *dimension produit: une des principales caractéristiques des produits électroniques, outre le contenu technologique, est leur fiabilité.²⁰*

Therefore, by the end of the decade, Framatome was committed to a three-pronged strategy: scaling down and rationalising heavy mechanical activities as inherited from the collapse of Creusot (i.e. the reduction of some 1,500 employees and concentration at the site of St. Marcel);

¹⁹ C.a.F. du 26/04/89, b. 890782 AEDF. Projet de rapport à l’Assemblée générale ordinaire, [1989]; c.a.F. du 08/09/89, b. 890783, AEDF.

²⁰ Orientations stratégiques de la société, octobre 1988, b. 890781, AEDF.

developing nuclear services and pursuing a policy of alliances in Europe and the USA; hastening to diversify the company's activities.²¹

In 1990 all these dynamics reached a new peak of tension with the takeover attempt by CGE and the ensuing "*feuilleton de sept mois*," as the special rapporteur of the Senate Finance Commission put it.²² Indeed, thanks to direct pacts between shareholders, in March 1990 CGE acquired Dumez's shares, so reaching a controlling position (52% of the capital), and obtained the benevolent neutrality of CEA. Such a move was, of course, deeply resented by Framatome, but it was also potentially embarrassing for the *Elisée*, as it entailed a de facto privatisation of nuclear engineering in France while the so-called policy of "*ni-ni*" (*ni nationalisation, ni privatisation*) had been one of the planks of Mitterrand's re-election campaign in 1988.²³ Therefore Framatome could count on a powerful political support as it launched a publicity campaign against the takeover ("*Framatome, un group qui sait où il va*") and charged Salomon Brothers Bank to devise a plan to remove CGE with new possible shareholders.²⁴ The direct intervention of Framatome directors in the controversy deeply upset Suard, whose relationship with Leny reached a new nadir:

*M. Suard fait état de sa surprise en constatant que les cadres de la société interviennent en leur qualité de dirigeants pour juger de la stratégie des actionnaires de l'entreprise. Il déclare vouloir renforcer la position de Framatome dans l'industrie nucléaire et lui conserver une autonomie nécessaire [...]. M. Leny, en se déclarent solidaire des cadres dirigeants [...], rappelle que la position de Framatome dans l'industrie nucléaire ne doit rien à la CGE. Il souligne les divergences entre les positions de la CGE, maintes fois rapportées par la presse, et celles qui viennent d'être énoncées par M. Suard.*²⁵

With the Socialist Party determined to fight in the Parliament against the plans of CGE, the Government intervened forcibly by imposing a negotiated solution that would safeguard its coordinating and supervising position in a sensitive area like nuclear energy against a 'surreptitious' privatisation, as Finance Minister Pierre Bérégovoy declared to the

²¹ Orientations stratégiques, juillet 1989, b. 890783, AEDF.

²² *Journal officiel de la République Française*, débats parlementaires, Sénat, séance du 07/12/90, 4707.

²³ Françoise Mitterrand, "L'entreprise et l'État," in *Lettre à tous les Français* (s.l., 1987). See Alain Gélédan (ed.), *Le bilan économique des années Mitterrand* (Paris: Le Monde-éditions, 1993), 119-139 and Marco Gervasoni, *François Mitterrand. Una biografia politica e intellettuale* (Torino: Einaudi, 2007), 146-154.

²⁴ "Avis de la Commission des Affaires économiques sur le projet de loi de finances pour 1990 – Énergie," Sénat, séance du 21/11/89, 18-19. "Rapport d'information sur le contrôle des entreprises publiques," Sénat, séance du 22/05/89, 18-21.

²⁵ C.a.F. du 25/04/90, b. 890786, AEDF.

National Assembly on 31 October 1990.²⁶ The CGE share of the capital was reduced to 44%, while the Société Rhodanienne Mobilière et Immobilière (a subsidiary of the nationalised Crédit Lyonnais) acquired 6%; the remaining 2% was attributed to Framépargne (Framatome employees' fund), which passed from 3% to 5%.²⁷ With the independence of the company secured, at least for the while, Framatome was free to pursue its own corporate strategy.

Between Old and New: Heavy Machinery and Connectors

After the collapse of Creusot, Framatome became responsible for the heavy machinery shops of the former parent company. Against rather depressing market trends, it was decided to consolidate these activities (i.e. staff reductions and reorganisation of the plants), nonetheless preserving Framatome's capacity. In the first instance, the framework agreement of February 1986 provided for a far-reaching, in-house training scheme aimed at absorbing as much personnel as possible in other activities, while the Mission d'Industrialisation Creusot promoted five projects in two years to create new employment opportunities in the Saône et Loire region.²⁸

Heavy boilerworks were concentrated at the Chalon/St. Marcel plant. With no new nuclear order from EDF starting with 1988 and the three pressure vessels for Hinkley Point B power station in the UK cancelled, the preservation of a minimum workload became increasingly dependant on the business of replacing aging steam generators with new ones. Therefore it became crucial to agree with EDF both an earlier-than-usual supply of heavy components for the power station at Civaux and – most importantly – a wider programme for replacing steam generators. The programme, moreover, was also supposed to strengthen Framatome position vis-à-vis Siemens and Westinghouse on the international market of nuclear services. The letter of intent by EDF duly arrived in August 1989 and great care was devoted to the operations on the steam generators of Dampierre 1 in 1990.²⁹

Fresh money was put into Thermodyn (rotating electrical machines) to invest in numeric control machines and computer tools, and in Clextral (extrusion systems for agroindustrial applications) for a new testing

²⁶ Assemblée Nationale, *comptendu de la séance du 31/10/90*, 4653-4.

²⁷ C.a.F. du 30/11/90, b. 890784, AEDF. For Suard's point of view, see Suard, *L'envol saboté*, 126-7.

²⁸ C.a.F. du 11/02/87; c.a.F. du 13/05/87, b. 890780, AEDF.

²⁹ C.a.F. du 16/12/87, b. 890780, AEDF. C.a.F. du 20/04/88, b. 890781, AEDF. C.a.F. du 14/02/88; rapport de gestion, 19/04/89, b. 890782, AEDF. C.a.F. du 08/09/89, b. 890784, AEDF. C.a.F. du 14/02/90, b. 890783, AEDF.

platform. In both cases the results were good: Thermodyn produced a bigger-than-expected turnover in 1988 thanks to a contract with the Navy, while on 23 November of the same year Clextral received the Prix de la Promotion Internationale de l'Industrie of the International Institute for Promotion and Prestige in Geneva.³⁰ In 1989 Neyrpic was reorganised by transferring non-mechanical activities to GEC-Alsthom and recapitalizing the resulting new company NFM (Neyrpic-Framatome-Mécanique), which soon started to produce drills under licence from Mitsubishi and in 1990 successfully participated to the European Transonic Windtunnel project.³¹

In the area of aerospace and military equipment, the strategy focused on the acquisition of a niche company, which would then be strengthened in order to turn it into a leading subject at European level by taking advantage by the reorganisation connected to the general slackening of military programmes towards the end of the Cold War. Framatome's approach was rather soft and gradual because, as Leny explained, it was necessary a step-by-step entry to allow the company a better knowledge of the new market and area of activity – hence a successful action. Therefore, in 1987 Framatome bought 20% of the capital of SFIM (Société Française de fabrication d'Instruments de Mesure) – a company specialised in autopilot systems for helicopters, gyroscopes and gun sights – and created with Aérospatiale the consortium Telas, specialised in laser and astronomic telescopes.³² At a later stage, in front of a wave of mergers at European level, Framatome cautiously initiated talks with Aérospatiale with a view to forming a 'light' pole together with SFENA (Société Française d'Equipements pour la Navigation Aérienne) and Crouzet – both subsidiaries of Aérospatiale. The project was not put into effect, however, and Framatome remained focused on reinforcing SFIM in the latter's domains, i.e. optronics and equipment for tanks and helicopters, while, at the same time, increasing its participation to the company's capital.³³

The same gradualist approach, but with much larger investments, was adopted in the fragmented field of connectors. In 1987 Framatome

³⁰ Rapport de gestion 1987, 08/04/88, b. 890780, AEDF. C.a.F. du 19/10/88, b. 890781, AEDF. Rapport de gestion 1988, 19/04/89, b. 890782, AEDF.

³¹ C.a.F. du 04/07/89, b. 890783, AEDF. C.a.F. du 12/12/90, b. 890784, AEDF. C.a.F. du 14/07/90, b. 890787, AEDF. See also Patrick Wagner, "Engineering Aspects of the European Transonic Windtunnel," *Advances in Cryogenic Engineering* 41b (1996): 1935-46.

³² C.a.F. du 16/12/87, b. 890780, AEDF. Rapport de gestion – 1987, 08/04/88, b. 890781, AEDF.

³³ C.a.F. du 19/10/88, b. 890781, AEDF. Note d'information, 12/12/88; rapport de gestion – 1988, 19/04/89, b. 890782 AEDF.

acquired 15% of Souriau, a company badly in need of an injection of fresh money, but negotiations with the Souriau family for a complete takeover dragged on during 1988 as the owners apparently did not realise immediately the gravity of their situation. Still in 1987 Framatome also acquired Jupiter, a small company that enjoyed a strong position in push-pull locking connectors and the leadership in military devices (e.g. special connectors for the primers of nuclear warheads); Jupiter was intended to integrate and strengthen the product array of Souriau.³⁴

In autumn 1988 Framatome launched a takeover bid on Burndy, a US manufacturer of electrical connectors and installation tooling, with the support of the United Bank of Colorado. The operation was successfully concluded in January 1989. In the meanwhile, the Souriau family accepted a deal that paved the way for the complete takeover of the company. Therefore, in early 1989 Jupiter, Burndy and Souriau were placed under a single holding company, Framatome Connectors International (FCI), headed by the same Eliane Morin who had presided over the Strategy Directorate.³⁵ With a combined turnover at FF 3.5 billions, on 19 April 1989 FCI was presented to the board of Framatome as a decisive event to allow the latter to remain a leading industrial group pending the upturn of the nuclear market, which was still deemed an inescapable mid-term option for carbon-free electricity generation.

Survival by Alliance: The Nuclear Sector

An immediate, evident feature that epitomises the radical change occurred in the 1980s is the number of Framatome people employed respectively in the engineering and manufacturing area compared to services and maintenance: while in 1983 there were 4,500 and 400 people in the two respective areas, by 1990 the numbers were 2,500 and 1,500.³⁶ Of course, the rise of this kind of activities – somewhat an inescapable after-sale service – dated back to the mid 1970s and it was part of the ordinary operational practice of a vast nuclear park. Nevertheless, the shifting relative weight of the different areas of activity inside Framatome was very much telling of a nuclear market, both domestic and global, which was more active in dealing with the existent rather than planning new capacity. By the mid 1990s such a process would be fulfilled with the creation of an ad hoc joint company with EDF, CETIC (Centre d'Entraînement aux Techniques d'Intervention sur Chaudières nucléaires); by then, people working in the area of services

³⁴ C.a.F. du 22/06/88; c.a.F. du 05/09/88, b. 890781, AEDF.

³⁵ C.a.F. du 29/11/88; c.a.F. du 14/12/88; c.a.F. du 14/02/89, b. 890782, AEDF.

³⁶ Fiche de synthèse sur la politique nucléaire de Framatome, January 1990, b. 890784, AEDF.

and maintenance had overtaken the number of employees involved in engineering and manufacturing.³⁷

The Strategy Directorate assessed nuclear power trends with moderate, short-term pessimism. Even without taking into account the issue of public acceptability in the aftermath of Three Mile Island and, especially, Chernobyl, all seemed to point to a lame market for new nuclear power stations: modest economic growth in advanced industrialised economies; widespread insolvency among developing countries; relatively low prices of fossil fuels. Perspectives were considered as particularly dark in Europe, whereas fast-growing Asian countries such as Japan, Korea, China and India had confirmed their nuclear option. Orders, however, were very few and absolutely inadequate to uphold the production capacity of Framatome in the short term. On the other hand, competition was cutthroat. Indeed, after having sold the first large-scale nuclear power station to China in partnership with the British G.E.C. in 1986, the following east-Asian orders went all to the USA (Combustion Engineering supplying twin 950-MW PWR nuclear steam supply systems for Korea Nuclear Units Nos. 11 and 12, and General Electric (GE) selling two advanced boiling water reactors to the Japanese).³⁸ All these orders highlighted the importance of sophisticated financial schemes and long-term industrial alliances, such as the one between GE on the one hand and Toshiba and Mitsubishi on the other. The situation of the nuclear fuel market was not rosy either, due to the slowdown in new power stations entering into service and the growth in burn-up rates. Once again, a tendency to international concentration in the industry was at play, with Siemens taking over Exxon Nuclear – the only ‘independent’ fuel producer in the USA – in December 1986.³⁹

As a matter of fact, by the late 1980s the export market, which at the beginning of the decade had been considered essential in order to redress the expected reduction of domestic orders, was hardly materialising. China was leaving open the nuclear option, but its financial difficulties did not seem to leave much room for hope. On the contrary, Framatome went through trying times first in finalising the contract for the Daya Bay station and then in dealing with inexperienced Chinese subcontractors.⁴⁰ Of course, the situation was likely to change in, say, 10 years because

³⁷ Framatome, 100-1.

³⁸ Ann MacLachlan, “C-E Selected To Supply NSSS for Two New South Korean Units,” *Nucleonics Week* 40 (1986): 1; Eric Lindeman, “TEPCO Sets 1991 for Construction Start on Two Advanced BWRs,” *Nucleonics Week* 21 (1987): 1.

³⁹ Plan stratégique 1989-1993 – stratégie et perspectives sectorielles, n.d., b. 890786, AEDF.

⁴⁰ C.a.F. du 24/09/87, b. 890780, AEDF. Rapport de gestion du conseil d’administration – 1987, 08/04/88; c.a.F. du 19/10/88, b. 890781, AEDF. See also Felix Torres, *Le chemin partagé: une histoire d’EDF en Chine, 1983-2011* (Paris: Bourin, 2011), 49-87.

pollution and infrastructural bottlenecks would force China, as well as India and the ailing Soviet Union, to resort to nuclear power – at least, in Framatome’s forecasts. The pace of this future renaissance, however, would be set by the advanced industrialised countries, both technically and economically; all the others would follow suit, according to the best formula for soft loans the former would put into place. In order to build up strengths for this rosier future, it was thus imperative for Framatome to pursue a policy of alliance with other industrial subjects so as to penetrate the largest single nuclear market in the world, i.e. the USA, and to consolidate its position in Europe. The USA and Europe were two correlated aspects of one and only strategy, in which the latter was probably the most important and nuanced one.

*L'intérêt principal, d'ordre stratégique, est de mettre en place les structures permettant l'élaboration d'une conception européenne commune. Ceci est une nécessité pour redonner sa crédibilité au nucléaire. Cette conception commune peut s'établir autour d'un accord franco-allemand et être plus réaliste que d'attendre l'émergence d'un consensus communautaire. La participation de l'industrie française à cette démarche permet d'en retirer les fruits mais aussi de l'influencer. Sinon le poids allemand risque d'infléchir les décisions dans leur sens sans contrepartie.*⁴¹

With the greatest and most heterogeneous nuclear park in the world, the USA represented the proverbial goose that lays golden eggs with regard to both fuel and services. The value of the service market alone was estimated at some \$4 billions by 1988. The most obvious partner would have been Westinghouse, the original owner of PWR technology, the appropriation of which had been the key to Framatome success. The US company, however, was resisting the idea of granting the French access to the North American market of nuclear services, as well as the formation of an equal partnership in the fuel area. After a half-hearted attempt with General Atomics, the attention was turned towards Babcock & Wilcox (B&W, then a subsidiary of McDermott Group), which had been in the eye of the storm as the NSSS supplier for Three Mile Island. In mid 1980s, along with Cogema and Uranium Pechiney – unavoidable partners in the nuclear fuel business according to an entrenched policy of the French Government – Framatome negotiated a participation in the B&W Fuel Company (BWFC). Eventually, the talks laboriously led to a letter of intent in August 1987 and final agreement on 4 December. In this way, the French party initially acquired 49% of BWFC.⁴²

⁴¹ Dossier sur le secteur nucléaire, 07/12/88, b. 890782, AEDF.

⁴² C.a.F. du 31/03/87; c.a.F. du 24/09/87; c.a.F. du 16/12/87, b. 890780, AEDF. On early Framatome activities in the nuclear fuel business see *Framatome*, 94-6.

In the summer of 1988 B&W proposed to Framatome a takeover of its whole Civil Nuclear Division. Since the aftermath of the incident at Three Mile Island McDermott was considering to quit the nuclear business, which by all means did not represent more than 10% of its turnover. Now in financial difficulties after the Black Monday of October 1987, McDermott intended to disinvest and offered Framatome to buy 50% of B&W with an option for the remaining 50%. While in the eyes of B&W this solution was better than being taken over by its direct competitor, i.e. Westinghouse, for Framatome it represented a most suitable opportunity to enter into the US nuclear services market. Indeed, if the agreement with General Atomics was aimed at offering a complete range of services across the whole primary circuit to North American customers, B&W presented the double advantage of complementary compared to Framatome and of a successful past experience on Westinghouse steam generators. Moreover, this alliance in the USA would likely strengthen Framatome hand in their dealings with Siemens in Europe.⁴³ Therefore, though the price asked by the Americans was rather high, Framatome deemed this opportunity as valuable:

*L'achat de cette division nous fournirait le point d'appui que nous recherchons depuis plusieurs années aux Etats-Unis pour développer notre activité de services sur ce marché qui représente à peu près la moitié du marché mondial (hors pays à économie planifiée). [...] La seule alternative similaire serait l'achat de la division nucléaire de Combustion Engineering qui n'a pas à la différence de B&W su prendre pied sur le marché des services aux chaudières Westinghouse.*⁴⁴

In the key Framatome Board meeting of 5 September 1988, Leny vigorously reiterated these arguments, especially the point about the need for a swift conclusion of the negotiation so that it would not impinge on the talks with Siemens. All in all, reactions were positive and the recently appointed head of Cogema, François de Wissocq, reinforced the idea that Combustion Engineering could not be a viable alternative to B&W, since all the efforts of the former were currently focused on Korea. The only dissenting voice was Suard's. The CGE president did not question the proposed action in principle, but emphasised possible snags, i.e. the assumption of legal responsibilities connected to current contracts of B&W (basically environmental responsibilities descending from Three Mile Island) and interference with the agreement already in force between Framatome and Westinghouse. On his part, Leny reassured the Board by stating that an audit would take place in order to protect Framatome from

⁴³ Leny à Guilhamon, 25/07/88, b. 890781, AEDF.

⁴⁴ Babcock & Wilcox Nuclear Services, 02/09/88, b. 890781, AEDF.

unwarranted legal liabilities and that B&W was fully aware of the French responsibilities towards Westinghouse since the negotiations on BWFC.⁴⁵

As a matter of fact, however, the timescale originally forecasted for the talks turned out being grossly underestimated. According to Leny, this was mainly out of the sheer multiplicity of actors involved in the negotiations, the single big hurdle being the legal protection of Framatome with respect to responsibilities connected to Three Mile Island. Thanks to the advice of the Washington branch of the law firm Fried, Frank, Harris, Shriver & Jacobson, with which Framatome had a long-established relationship,⁴⁶ the French company consistently refused to buy anything connected to the B&W system – which McDermott was offering at token price – and engaged in a time-consuming analysis of the legal papers.⁴⁷ Nevertheless Framatome documents suggest other difficulties too, e.g. the existence of differing schools of thought inside McDermott. Most of all, the two negotiations – with B&W in the USA and with the Germans in Europe – could not be kept separated after all. While a binding letter of intents on 17 August 1989 led to the creation of the B&W Nuclear Service Company (BWNSC), a memorandum between B&W and Siemens prefigured a similar partnership for the supply of PWRs in the USA. Significantly, Siemens would participate via its joint company with Framatome, Nuclear Power International (NPI).⁴⁸

By the end of the year BWNSC obtained a \$40 million-worth contract with Duke Power for the maintenance of steam generators in seven nuclear power units, four of which built by Westinghouse – a promising start, if one considers that Framatome had paid \$55 millions to seal the agreement with B&W.⁴⁹ BWNSC was a successful competitor in the nuclear service market even outside the USA, obtaining a further contract for piping cuffs in the steam generators of the Westinghouse-supplied Almaraz 1 power plant in Spain.⁵⁰

⁴⁵ C.a.F. du 05/09/87, b. 890781, AEDF.

⁴⁶ Sargent Shriver, former ambassador to France, had played a key role back in 1978 in obtaining the US Government's approval of the French bid for China's nuclear power stations, while Pierre Charreton – the current chief administrative officer of Areva – had been detached to Fried, Frank, Harris, Shriver & Jacobson in Washington in 1984-85 before taking over responsibilities in Framatome's diversification into the connectors industry. See Yves Girard, *Un neutron entre les dents* (Paris: Rive Droite, 1997), 280-2 and "AFJE Pierre Charreton," *Les Echos*, January 18, 1994.

⁴⁷ Leny to the Author, 15/12/2014.

⁴⁸ C.a.F. du 14/02/87, b. 890782, AEDF. Point sur les négociations avec B&W, n.d., b. 890783, AEDF.

⁴⁹ C.a.F. du 13/12/89, b. 890784, AEDF.

⁵⁰ C.a.F. du 12/12/90, b. 890784, AEDF.

The most promising perspective, however, seemed to materialise when in August 1990 the US Department of Energy selected a consortium made by EBASCO and CEGA (a joint company created by Combustion Engineering and General Atomics), of which BWNSC was a member, for the design work for the two new production reactors aimed at military purpose. Indeed, the three surviving plants at Savannah River had been shut down in 1988 for safety reasons and now the General Atomics modular high-temperature, gas-cooled reactor design – to which Framatome could effectively contribute in terms of calculations of the core – apparently gained the upper hand in the competition with Westinghouse’s heavy water reactor technology for a multi-billion order. This opportunity eventually failed to materialise due to the end of the Cold War and the resulting surplus of tritium in the US stockpile.⁵¹ Meanwhile, after Pechiney’s exit from the nuclear business in 1992, Framatome and Cogema acquired the whole of BWNFC; the former simultaneously made the same with BWNSC. Then the two companies were merged and by the end of 1995 Framatome Technologies, with more than 1500 engineers and technicians at its headquarters at Lynchburg (VA), represented an important entity in the Framatome group.⁵²

As mentioned above, in Europe an alliance with Kraftwerkunion (KWU), Siemens’ nuclear arm, looked like the only viable option to attain the twin-pronged aim of speeding up a nuclear renaissance and, at the same time, avoiding an overbearing German influence on the latter – the whole clothed in ‘European’ robes. The idea of a Franco-German entente was not really new, but when France eventually opted for PWR technology Framatome was not a partner possibly standing on a par with the German industry, which enthusiastically looked at the USA. In 1969 Siemens and AEG created a joint company, i.e. KWU, to supply turnkey nuclear power stations to the electric utilities of the country.⁵³ By the early 1980s the situation had changed, however. Thanks to the orders of EDF, Framatome had grown into a fully-fledged industrial champion, while the cut-throat competition for exports in Iran, South Korea and China entailed very favourable financial terms with a view to enticing customers, but at considerable costs for the budget of the exporting countries. According to

⁵¹ C.a.F. du 17/10/90, b. 890784, AEDF. Elaine Hiruo, “DOE Taps EBASCO and CEGA for New Production Reactors,” *Nucleonics Week* 33 (1990): 1. *Id.*, “NPR Hit with Another Deferral,” *Nucleonics Week* 38 (1992): 1.

⁵² Leny to the Author, 15/12/2014. *Framatome*, 118-9.

⁵³ Girard, *Un neutron entre les dents*, 93-4. Klaus Barthelt and Klaus Montanus, “Begeisterter Aufbruch. Die Entwicklung der Kernenergie in der Bundesrepublik Deutschland bis Mitte der siebziger Jahre,” in *Energie, Politik, Geschichte: nationale und internationale Energiepolitik seit 1945*, ed. Jens Hohensee and Michael Salewski (Stuttgart: Steiner, 1993), 89-100.

Leny, this is the reason why he was approached by Prime Minister Laurent Fabius suggesting that Framatome should endeavour to study with KWU, now a Siemens subsidiary, ways and means to devise a common offer for the export market.⁵⁴

Leny might be the right man for such a rapprochement by virtue of his friendly relations with German colleagues dating back to the 1960s, when he was project manager of the Orgel Reactor at the Euratom Common Research Centre at Ispra. In particular, he was in good terms both with the outgoing head of KWU, Klaus Barthelt, and the latter's incoming successor, Heinrich von Pierer. Finally, the catastrophe at Chernobyl provided the exceptional context against which the application of antitrust rules did not rank so high compared to safety in the nuclear sector, so by 1987 Framatome and KWU were making an effort at mending their technological differences by devising a 'common' nuclear island in the range of 600-1,000 MW. Of course, these products were intended solely for the export market and a joint Franco-German negotiation with China for a 600 MW reactor did actually take place.⁵⁵

At the Board meeting of 22 June 1988, Leny explained that – in spite of considerable technical difficulties – one could envision a long-term cooperation with the Germans by way of a joint commercial entity charged with defining the parameters of a common reactor system, at first for the export market and then for Europe.

*Malgré l'existence de deux systèmes d'îlots nucléaires ayant des caractéristiques qui leur sont propres et répondant à des critères de sûreté et d'exploitations qui ne se recouvrent pas sur des points importants, un niveau d'évolution technique et un compétitivité économique comparables permettent d'envisager une coopération à long terme.*⁵⁶

It is worth noting that at this very inception of what was to become the European Pressurized Reactor (EPR) none of Framatome shareholders publicly voiced any particular concern, with the exception of EDF wishing to keep its freedom of action in the choice and definition of nuclear islands for power stations in France. It is also worth noting a certain urgency on the part of the Framatome leadership, which feared that a comparably higher level of support for the "Konvoi" reactor system from the German Federal Government and electric utilities might lead to a preponderance of Siemens in the mid term.⁵⁷

⁵⁴ Leny to the Author, 13/12/2014. See also Heinrich von Pierer, *Gipfel-Stürme: Die Autobiographie* (Berlin: Econ, 2011), 78-97.

⁵⁵ Leny to the Author, 13/12/2014. C.a.F. du 13/05/90; c.a.F. du 24/09/90, b. 890780, AEDF. Dossier sur le secteur nucléaire, 07/12/88, b. 890782, AEDF.

⁵⁶ C.a.F. du 22.06.88, b. 890781, AEDF.

⁵⁷ C.a.F. du 19/10/88, b. 890781, AEDF.

By the turn of 1988 the basic lines of the joint entity were already clear: the new company would be headquartered in Paris with a Franco-German tandem at the helm; while Framatome would exercise the leadership as far as the NSSS was concerned, KWU would do the same for the balance of the nuclear island. At the same time, however, discontent was brewing inside the Board. In spite of safeguard clauses against the case of a unilateral moratorium on nuclear power in Germany or a failure of the cooperation on the common nuclear island, the CEA director-general, Jean-Pierre Capron, expressed some uneasiness at the idea of too tight a relationship with the Germans. The real, big problem, however, was that the Franco-German rapprochement represented a threat to Alsthom, which – after having lost the turbogenerators contract for the Chinese nuclear power station in Guangdong in favour of the British – now feared a looming hegemony of Siemens by way of the agreement with Framatome.⁵⁸

After the agreement had been initialled at Schloß Liebenstein in February 1989, just a couple of days before the signing ceremony, planned for 6 April in Paris, Suard sent a strong letter to Leny lamenting both the method and content at the eleventh hour. According to the CGE president, Framatome had not allowed shareholders to assess properly the negotiations; moreover, by granting to Siemens the role of architect-engineer in the case of turn-key bids, the agreement offered an unwarranted advantage to the Germans to the detriment of the French industry, i.e. Alsthom.

Vu la publicité déjà donnée à cette accord au moment où vous saisissez vos actionnaires, il est difficile pour eux de faire valoir leur point de vue et vous, si vous le souhaitez, pour en tenir compte. C'est une méthode de travail à laquelle il faudra trouver un remède. [...] une telle disposition confère un avantage à l'industrie allemande qui n'est pas justifié, Framatome pouvant au besoin, en s'alliant à d'autres sociétés françaises et en particulier aux filiales de la CGE, constituer un pool de savoir-faire tout aussi performant que le groupe Siemens.⁵⁹

According to Leny, Suard – contrary to his predecessor Georges Pébereau, who is said to have approved in principle the alliance between Framatome and KWU – was deeply hostile to the Germans in general and thereby a priori reticent to this rapprochement. In his memoirs, Suard claimed that the whole operation was motivated by the vehement opposition of Framatome against the idea of integrating the French NSSS supplier into what was to become Alcatel-Alsthom and that Siemens would be later called in to weight upon the French Government in order to

⁵⁸ C.a.F. du 14/12/88; c.a.F. du 14/01/89, b. 890782, AEDF.

⁵⁹ Suard à Leny, 04/04/89, b. 890782, AEDF.

defuse the takeover attempt by CGE.⁶⁰ What is certain is that the future role of Alsthom as a heavy components supplier for the conventional island was the crux of the matter, as one can understand from the clash between Dominique Dégot and Paul Combeau – vice president of Framatome and Alsthom respectively – on the scope of the role of architect-engineer during the heated Board meeting called at short notice on 5 April 1989. Dégot explained, to no avail, that the architect-engineer would have a rather limited scope, since the joint company (in which Framatome would be preponderant in the definition of both the NSSS and the fuel) would be the leader of any building consortium, dealing directly with the customer and preparing the work planning; moreover, if the conventional island was outside the boundaries of the cooperation with the Germans, the principle of an even sharing of supply contracts would hold true anyway.⁶¹

Framatome was compelled to redraft the relevant article of the agreement in order to accommodate Alsthom concerns. The new article 10-6 read:

In case a contract for a Common Product includes at least the Nuclear Island and the conventional island, the engineering activities and supplies of the conventional island shall be equally shared between the Parties and the respective industrial capabilities usually involved in the field of such enlarged scope. Furthermore, in such latter case, the features of the overall design of the complete nuclear power plant being jointly decided, the following principles shall apply:

- Siemens shall be the architect engineer for the overall scope should this function be included in the contract. This role of architect engineer shall not be exercised in a way which could impair the effective participation of the industrial capabilities usually involved with Framatome.
- The overall design of the conventional island shall be subject to a review by the Partners.⁶²

This notwithstanding, still on the eve of the postponed signing ceremony with the Germans on 13 April 1989, Suard insisted in what was a rearguard battle by then. Leny reiterated all the past arguments, reinforced by the new art. 10-6 agreed with Siemens, and emphasised that the agreement represented the best deal possible after three years of negotiations. If Framatome had put it into question again, the whole lot – which was “*porteur de futur*” for the company – would have collapsed. This time the other shareholders supported Leny in unequivocal terms: Guilhamon stated that EDF considered the process of definition of the common product by the joint company as the best possible guarantee;

⁶⁰ Leny to the Author, 13/12/2014. Suard, *L'envol saboté*, 128.

⁶¹ C.a.F. du 05/04/89, b. 890782, AEDF.

⁶² Leny aux actionnaires, 12/04/89, b. 890782, AEDF.

Capron pointed out that the agreement as it stood was in accordance with the interests of France's nuclear policy. Thereby, with the abstention of representatives of the CGE galaxy, the Board sanctioned the agreement with Siemens.⁶³

Nuclear Power International was established in October 1989 as a general partnership between Framatome and KWU with a board of four members, a general manager appointed by Siemens and a deputy general manager chosen by the French; Framatome expressed the chairman of the supervisory board, the body through which the two parent companies controlled NPI. Early design work on the reactor core was immediately started, as well as the process of evaluation of security features and devices. In one year the Franco-German team had agreed the general layout of the installation, with a cylindrical reactor building.⁶⁴

In accordance with the early thrust towards a Franco-German rapprochement, NPI was immediately active in dealing with nuclear bids on the world market, for example by obtaining a contract for a feasibility study of a new nuclear power station in Finland which would lead to the Olkiluoto 3 Project.⁶⁵ Meanwhile, the fall of the Berlin Wall and the collapse of Communist regimes throughout Eastern Europe were apparently opening new possibilities in the former Soviet Bloc, especially in the fields of fuel supplies and nuclear services. Framatome had had contacts with the USSR since 1975 on Soviet initiative through Creusot, which then supplied heavy machinery to Moscow's oil industry. Up to 1982, due to the licence agreement with Westinghouse, these exchanges were rather limited in scope and concerned mainly the Water-Water Energetic Reactor (VVER, the Soviet PWR) system. Thereafter they grew in openness and after Chernobyl Framatome was actively involved in the safety assessment of the nuclear power station at Erevan, in Armenia.⁶⁶ Indeed, in the context of the Franco-Soviet cooperation, by the beginning of 1987 the Soviet authorities had confirmed their wish to work with Framatome and EDF on both the operation and safety of nuclear power stations; they were interested in nuclear services as well. Leny even accompanied Mitterand in his presidential visit to Moscow in November 1988, but still at the eve of the fall of the Berlin Wall these contacts were not producing concrete business for Framatome.⁶⁷

⁶³ C.a.F. du 12/04/89, b. 890782, AEDF.

⁶⁴ C.a.F. du 13/12/89, b. 890784, AEDF. C.a.F. du 17/10/90, b. 890786, AEDF. "Brief Outline of the Agreement," *Framatome Newsletter* (April 1989): 3.

⁶⁵ C.a.F. du 14/06/90, b. 890786, AEDF.

⁶⁶ Leny to the Author, 19/12/2014. *Framatome*, 116.

⁶⁷ C.a.F. du 11/02/87, b. 890780, AEDF. C.a.F. du 14/12/88; c.a.F. du 14/02/89, b. 890782, AEDF.

Due to the lack of results and to ever-present misgivings regarding the Germans, in 1990 it was decided to involve NPI in this search for new opportunities in the countries of Eastern Europe, where CEA was conducting a renewed effort for strengthening cooperation in safety, nuclear waste management and facility decommissioning. Though expectations were not really so high, at least on Framatome's part, the attention increasingly focused on Czechoslovakia. Here, along with the cooperation agreement between CEA and the Czechoslovak Atomic Energy Commission, on 24 February 1991 another deal was clinched with Vitkovice, a heavy manufacturing firm in Moravia which produced VVER steam generators and pressurizers under Soviet licence. In this way, Framatome became associated with Vitkovice – through NPI – in the realm of constructions and services for light water reactors with purportedly good results.⁶⁸

Therefore, the partnership with Siemens was also expedient to penetrate the potentially wide, but difficult reactor market of the former Soviet bloc, in which a formidable and urgent safety problem was inevitably leading to intense collaboration across the former Cold-War divide. While such collaboration nurtured the emergence of a global community of experts, the early inadequacy of nuclear regulations and the catastrophic financial conditions of most former Communist countries made very problematic turning collaboration into profitable business. NPI was apparently a potential trump card in this area too and the perspectives were considered promising enough to warrant the creation – after the dissolution of Czechoslovakia – of EVF (European VVER Fuels) with Cogema and Siemens to provide also fuel services for the East European reactor park.⁶⁹

Conclusions

Framatome reacted timely in front of a depressing nuclear market trend by progressively formulating a strategy that was basically aimed at using the sizeable profits earned through the French nuclear power programme in order to preserve the company's capacity and expertise for better times. This process intertwined with and was complicated by the struggle to defend Framatome independence as an industrial subject in respect of its own shareholders, with first the crisis of Creusot-Loire and then the clash

⁶⁸ C.a.F. du 13/12/89, b. 890784, AEDF. C.a.F. du 14/06/90, b. 890787, AEDF. Leny to the Author, 19/12/2014. Ann MacLachlan, "France and Soviet Union Set Nuclear Cooperation Priorities," *Nucleonics Week* 41 (1990): 12. "France/Czechoslovakia," *Nucleonics Week* 6 (1991): 18.

⁶⁹ Leny to the Author, 19/12/2014. *Framatome*, 117. Thomas Wellock, "The Children of Chernobyl: Engineers and the Campaign for Safety in Soviet-designed Reactors in Central and Eastern Europe," *History and Technology* 29 (2013): 3-32.

with Suard's CGE. By the way, the acquisition of the Energy Division of Creusot further complicated the implementation of this strategy.

The strategy would have been basically sound if it had not revolved around the forecast of an upturn of the nuclear market in the mid term; such a nuclear renaissance, however, hardly materialised. Moreover, with hindsight, the final choice in favour of connectors – which was presented as a way to protect Framatome from the vagaries of economic cycles –⁷⁰ was not really so happy: a big amount of money was spent redressing Souriau and organising the connectors pole under the umbrella of FCI,⁷¹ but the latter provided still 25% of Framatome's turnover in 1994, whereas the percentage should have been 50% already in 1992.⁷² Areva would sell the whole FCI in 2005.⁷³ The well-known difficulties of EPR development and the ultimate exit of Siemens from the nuclear industry cast a shadow also on the nuclear leg of Framatome's strategy.⁷⁴ Its basic – and probably unforeseeable – flaw, however, consisted in confiding in a possible re-start of nuclear power in the Western industrialised countries after Chernobyl.

Of course, these conclusions hold true as far as a superficial assessment of Framatome's corporate strategy in the 1980s is concerned. It would be extremely interesting to have a chance of analysing it more in details in order to understand the internal dynamics of the company – otherwise overshadowed by the figure of Jean-Claude Leny. On the other hand, such internal dynamics should be put into relationship with the constant presence of the Government and, more generally, of the conditioning effect of political power. In short, a comprehensive history of Framatome's patterns of success and failure would be expedient not only to investigate the transformation of business in an age of globalisation, but also for a better understanding of the modes of operation of power in a dimension that goes increasingly beyond the nation-state.⁷⁵

⁷⁰ *Framatome*, 144.

⁷¹ C.a.F. du 17/10/90, b. 890784, AEDF. C.a.F. du 25/04/90, b. 890786, AEDF. C.a.F. du 14/06/90, b. 890787, AEDF.

⁷² "Framatome s'attaque aux marchés de masse," *Usine nouvelle*, January 26, 1995.

⁷³ Jean-Pierre Vernay, "Areva met en vente FCI," *Usine nouvelle*, September 1, 2005.

⁷⁴ See an interview to Leny of 17 March 2009 at <http://www.clubdesvigilants.com/archives/2009/03/areva-siemens-le-choc-des-arrogances>.

⁷⁵ This should urge scholars to call for a stated policy of preservation of and access to its historical documents on the part of Areva.